

# PATENT SPECIFICATION

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691548



Date of filing Complete Specification: Nov. 5, 1951.

Application Date: Nov. 6, 1950. No. 27111/50.

(Patent of Addition to No. 645,645 dated Aug. 19, 1949).

Complete Specification Published: May 13, 1953.

Index at acceptance:—Class 81(ii); B9(a2a: b3).

## COMPLETE SPECIFICATION

### Improvements in or relating to Nasal Inhalers

We, BEECHAM RESEARCH LABORATORIES LIMITED, a Company organised under the laws of Great Britain, of 68, Pall Mall, London, S.W.1, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

- 10 This invention is an improvement in or modification in detail of the invention described in our specification No. 645,645, which claims a nasal inhaler incorporating, in a compact structure suitable for the pocket, a chamber for containing an inhalant and having passages adapted to communicate with the atmosphere on the one hand and with a breathing aperture or apertures in a member for application to the nose on the other hand, a non-return valve preventing exhaled air from passing through the chamber, a passage for exhaled air communicating with the said aperture or apertures and adapted to communicate with the atmosphere, and a non-return valve preventing the inhaling of air through said passage. The non-return valves are preferably ball valves.
- 30 According to one feature of the present invention, the nose-piece comprises two nasal plugs so spaced apart that they may be applied to both nostrils at once, the plugs having adjacent walls which converge downwardly to meet each other, a breathing aperture being disposed in each such wall. The chief advantage of this is that the nose-piece is more adapted to suit noses of various nostril spacings. In the preferred construction, the tops of the plugs slope downwardly towards a wall common to the two plugs. The breathing apertures may, moreover, be disposed substantially at the junctions of the said adjacent walls with the tops of the plugs. This is more adapted to suit noses of different shapes.

[Price 2/8]

According to another feature of the present invention, the non-return valves are ball valves working in vertical passages. This lends itself to a construction in which the balls are both on their seatings just prior to use of the inhaler, and there is thus no time lag before the passage to the atmosphere is sealed when inhaling.

According to yet another feature of the present invention, the chamber containing the inhalant is in the form of a refill cartridge detachably secured to the main body of the inhaler. This cartridge is preferably a cylinder which is completely open at one end and provided with an air hole at the other end. A cylindrical boss may be provided projecting from the bottom of the main body of the inhaler and adapted to be a force-fit within the open end of the cylinder.

The invention is illustrated in the drawings accompanying the provisional specification in which:—

Figure 1 is an isometric view of a pocket inhaler according to the present invention.

Figure 2 is a sectional view on a plane parallel to the large side of the pocket inhaler,

Figure 3 is a plan view on the line 3—3 of figure 2,

Figure 4 is a section on the line 4—4 of figure 2, and

Figure 5 is a sectional view of a refill cartridge for use in the same inhaler.

The same numeral references in all figures refer to the same members.

A main body 1 is provided with two synthetic resin cover members 2 and 3 which are force-fitted on to the main body 1 so as to form a compact unit for the pocket. A centrally-bored boss 4 is provided on the bottom of the body 1 and, force-fitted round this boss 4, is a refill cartridge 5. This refill cartridge 5 is filled with an inhalant packing 5a and

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provided with an air inlet 6 and, when not connected to the main body, with two lids 6a and 7.

On the top of the body 1 there is provided a nose-piece 8 comprising two nasal plugs 9 and 10 whose adjacent surfaces are inwardly sloping and converge to meet each other at 11. In these adjacent surfaces are provided breathing apertures 9a and 10a which are disposed substantially at the junctions of the said surfaces with the tops of the plugs. The tops of the nasal plugs 9, 10 slope downwardly towards a wall 17 common to the two plugs.

A passage 12 is provided between the top face and the bottom face of the body 1. A passage 13 is provided between the centrally-bored boss 4 and the inside of the nose-piece 8, and there is provided in this passage 13 a ball valve 14. A further passage 15 is provided in the body 1 to connect the inside of the nose-piece 8 with one of the smaller side faces of the body 1, and other ball valve 16 is provided in a vertical portion 15a of this passage 15.

In the working of this device the lid member 2 is removed to uncover the nose-piece 8 and the plugs 9 and 10 may be applied immediately to the nose. The nostrils do not normally completely envelope the top of the plugs 9 and 10 as with prior types, but rest against the adjacent surfaces of the plugs opposite the apertures 9a and 10a. On inhaling, air will be drawn through the passage 12 into the space enclosed by the lid member 2, whence it will be drawn through the inlet 6, the inhalant packing 5a, the passage 13 via the ball valve 14, the inside of the nose-piece 8 and out of the apertures 9a and 10a into the nostrils. On exhaling, air will be blown through the apertures 9a and 10a into the nose-piece 8, through the passage 15 and the ball valve 16 and out to atmosphere.

When the inhalant packing 5a loses its potency, the refill cartridge must be replaced by a new one. This is effected by removing the lid member 2 and pulling the old cartridge 5 off the boss 4. A new cartridge is prepared by removing the lids 6a and 7 when it is ready to be force-fitted onto the boss 4 in place of the old one. The lid member 2 is then replaced onto the body 1 and the inhaler is ready for use.

The refill cartridge may be made of polythene, together with its lids 6a and 7, to provide the resiliency necessary for the force-fit, provided that the particular

medicament used has no action on polythene. Otherwise, it may be necessary to use another synthetic resin material which, if considerably less resilient than polythene, may necessitate the above-described force-fit connection being replaced by screw connections.

The remaining parts of the inhaler shown in the drawings are suitably made of synthetic resin, e.g. the materials sold under the registered trade marks "Bakelite" and "Perspex."

What we claim is:—

1. The improvement or modification of the invention claimed in specification No. 645,645 in which the nose-piece comprises two nasal plugs so spaced apart that they may be applied to both nostrils at once, the plugs having adjacent walls which converge downwardly to meet each other, a breathing aperture being disposed in each such wall.

2. The improvement or modification claimed in claim 1 in which the tops of the plugs slope downwardly towards a wall common to the two plugs.

3. The improvement or modification claimed in claim 2 in which the breathing apertures are disposed substantially at the junctions of the said adjacent walls with the tops of the plugs.

4. The improvement or modification of the invention claimed in specification No. 645,645 in which the non-return valves are ball valves working in vertical passages.

5. The improvement or modification of the invention claimed in specification No. 645,645 in which the chamber containing the inhalant is in the form of a refill cartridge detachably secured to the main body of the inhaler.

6. The improvement or modification claimed in claim 5 in which the cartridge is a cylinder completely open at one end and provided with an air hole at the other end, the open end being adapted to be a force-fit round a cylindrical boss projecting from the main body of the inhaler.

7. The improvement or modification claimed in claim 6 in which the refill cylinder is made of polythene.

8. A nasal inhaler substantially as particularly described with reference to and as shown in the accompanying drawings.

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## PROVISIONAL SPECIFICATION

## Improvements in or relating to Nasal Inhalers

We, **BERCHAM RESEARCH LABORATORIES LIMITED**, a Company organised under the laws of Great Britain, of 68, Pall Mall, London, S.W.1, do hereby declare this invention to be described in the following statement:—

This invention is an improvement in or modification in detail of the invention described in our specification No. 645,645, which claims a nasal inhaler incorporating, in a compact structure suitable for the pocket, a chamber for containing an inhalant and having passages adapted to communicate with the atmosphere on the one hand and with a breathing aperture or apertures in a member for application to the nose on the other hand, a non-return valve preventing exhaled air from passing through the chamber, a passage for exhaled air communicating with the said aperture or apertures and adapted to communicate with the atmosphere, and a non-return valve preventing the inhaling of air through said passage. The non-return valves are preferably ball valves.

According to one feature of the present invention, the nose-piece comprises two nasal plugs so spaced apart that they may be applied to both nostrils at once, the plugs having adjacent walls which converge downwardly to meet each other, a breathing aperture being disposed in each such wall. The chief advantage of this is that the nose-piece is more adapted to suit noses of various nostril spacings. In the preferred design, the tops of the plugs slope downwardly towards a wall common to the two plugs. The breathing apertures may be disposed substantially at the junctions of the said adjacent walls with the tops of the plugs. This is more adapted to suit noses of different shapes.

According to another feature of the present invention, the balls of both non-return valves work in vertical passages. This lends itself to a construction in which the balls are both on their seatings just prior to use of the inhaler, and there is thus no time lag before the passage to the atmosphere is sealed when inhaling.

According to yet another feature of the present invention, the chamber containing the inhalant is in the form of a refill cartridge detachably secured to the main body of the inhaler. This cartridge is preferably a cylinder which is completely open at one end and provided with an air hole at the other end. A cylindrical boss may be provided project-

ing from the bottom of the main body of the inhaler and adapted to be a force-fit within the open end of the cylinder.

The invention is illustrated diagrammatically in the accompanying drawings 65 in which:—

Figure 1 is an isometric view of a pocket inhaler according to the present invention,

Figure 2 is a sectional view on a plane 70 parallel to the large side of the pocket inhaler,

Figure 3 is a plan view on the line 3—3 of figure 2,

Figure 4 is a section on the line 4—4 75 of figure 2, and

Figure 5 is a sectional view of a refill cartridge for use in the same inhaler.

The same numeral references in all figures refer to the same members. 80

A main body 1 is provided with two synthetic resin cover members 2 and 3 which are force-fitted on to the main body 1 so as to form a compact unit for the pocket. A centrally-bored boss 4 is provided on the bottom of the body 1 and, force-fitted round this boss 4, is a refill cartridge 5. This refill cartridge 5 is filled with an inhalant packing 5a and provided with an air inlet 6 and, when not connected to the main body, with two lids 6a and 7. 85

On the top of the body 1 there is provided a nose-piece 8 comprising two nasal plugs 9 and 10 whose adjacent surfaces are inwardly sloping and converge to meet each other at 11. In these adjacent surfaces are provided breathing apertures 9a and 10a which are disposed substantially at the junctions of the said surfaces with the tops of the plugs. The tops of the nasal plugs 9, 10 slope downwardly towards a wall 17 common to the two plugs. 95

A passage 12 is provided between the top face and the bottom face of the body 1. A passage 13 is provided between the centrally-bored boss 4 and the inside of the nose-piece 8, and there is provided in this passage 13 a ball valve 14. A further passage 15 is provided in the body 1 to communicate the inside of the nose-piece 8 with the top face of the body 1, and another ball valve 16 is provided in a vertical portion 15a of this passage 15. 100

In the working of this device the lid member 2 is removed to uncover the nose-piece 8 and the plugs 9 and 10 may be applied immediately to the nose. The nostrils do not normally completely en- 115 120

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- velopes the top of the plugs 9 and 10 as with prior types, but rest against the adjacent surfaces opposite the apertures 9a and 10a. On inhaling, air will be drawn through the passage 12 into the space enclosed by the lid member 3, whence it will be drawn through the inlet 6, the inhalant packing 5a, the passage 13 via the ball valve 14, the inside of the nose-piece 8 and out of the apertures 9a and 10a into the nostrils. On exhaling, air will be blown through the apertures 9a and 10a into the nose-piece 8, through the passage 15 and the ball valve 16 and out to atmosphere.

When the inhalant packing 5a loses its potency, the refill cartridge must be replaced by a new one. This is effected by removing the lid member 3 and pulling

the old cartridge 5 off the boss 4. A new cartridge is prepared by removing the lids 6a and 7 when it is ready to be force-fitted onto the boss 4 in place of the old one. The lid member 3 is then replaced onto the body 1 and the inhaler is ready for use.

The refill cartridge is suitably made of polythene, together with its lids 6a and 7, to provide the resiliency necessary for the force-fit. The remaining parts of the inhaler shown in the drawings are suitably made of synthetic resin, e.g. such as the materials sold under the registered trade marks "Bakelite" and "Perspex."

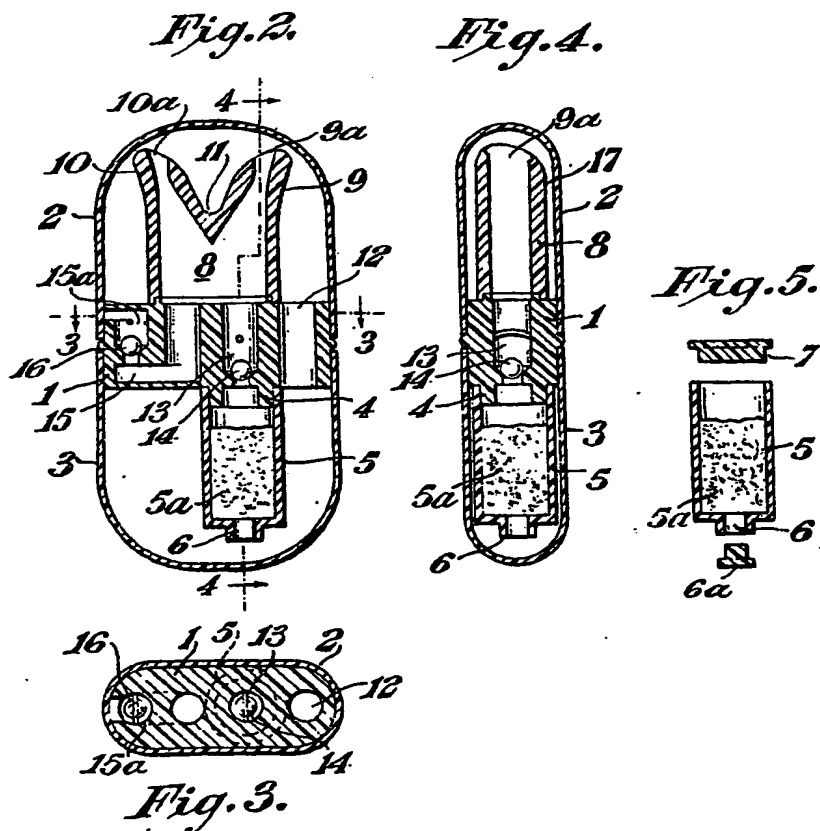
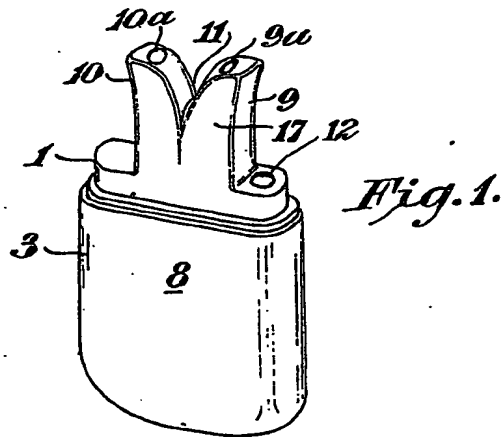
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Leamington Spa: Printed for Her Majesty's Stationery Office, by the Courier Press.—1953.  
Published at The Patent Office, 25, Southampton Buildings, London, W.C.2, from which copies may be obtained.

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